

## PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

YOU ME PATENT &amp; LAW FIRM

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PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)



Date of mailing  
(day/month/year) 10 MAY 2005 (10.05.2005)

Applicant's or agent's file reference  
OPP043595KR

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/KR2004/003491

International filing date (day/month/year)

29 DECEMBER 2004 (29.12.2004)

Priority date (day/month/year)

31 DECEMBER 2003 (31.12.2003)

International Patent Classification (IPC) or both national classification and IPC

IPC7 C12P 17/02

Applicant

SAMYANG GENEX CORPORATION et al

## 1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

## 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

## 3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/KR



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Box No. 1 Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing  
☐ table(s) related to the sequence listing

b. format of material

- ☐ in written format  
☐ in computer readable form

c. time of filing/furnishing

- ☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	-1-12	YES
	Claims	None	NO
Inventive step (IS)	Claims	1-9	YES
	Claims	10-12	NO
Industrial applicability (IA)	Claims	1-12	YES
	Claims	None	NO

2. Citations and explanations :

The following documents have been considered for the purpose of this written opinion:

D1: The Plant Cell, Vol.15:1468-1479 (2003-06)

D2: WO 1989/06686 (1989-07-27)

1. Novelty and Inventive Step

The present invention relates to a method for mass production of secondary metabolites by culturing plant cells in a medium treated with alkanolic acid or its salt.

D1(in METHODS) discloses a culture medium containing 10 mM sodium butyrate for tobacco.

D2 discloses a process to enhance the efficiency of specific protein production by adding an effective amount of butyric acid or its salt to the culture medium. Specifically, the production of monoclonal antibodies is enhanced by culturing hybridoma cells in a medium containing an effective amount of butyric acid.

The subject matter of claims 1 to 9 is a method for production of secondary metabolites by culturing plant cells in a medium containing alkanolic acid.

Compared with the present application, none of the above-mentioned prior art documents suggest a method for production of secondary metabolites in plant cell culture by treating a culture medium with alkanolic acid or salt thereof. In addition, the subject matter of claims 1 to 9 of the present invention does not seem to be easily invented by a person skilled in the art by using the teachings of D1 and D2.

Therefore, the subject matter of claims 1 to 9 is novel and also involves an inventive step [PCT Article 33(2) and (3)].  
(Continued on Supplemental Box.)

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**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

**Box. V**

The subject matter of claims 10 to 12 is a medium comprising plant cell culture medium and 0.1 mM to 20 mM of alkanolic acid. The present application discloses a medium containing alkanolic acid for plant cells while D1 discloses a medium containing butyric acid for plant. Thus, the novelty of the claims 10-12 can be acknowledged. [PCT Article 33(2)]

Although, the media of claims 10 to 12 are limited by the object of the invention (for plant cell culture), the kind of the plant cell (claim 11), and the kind of the secondary metabolites (claim 12), the technical characteristics of the medium (a medium containing 0.1 mM to 20 mM of alkanolic acid for plant) is the same as those of the medium in D1. Thus, the subject matter of claims 10 to 12 of the present invention seems to be easily invented by a person skilled in the art from D1.

Therefore, the subject matter of the claims 10-12 lacks an inventive step [PCT Article 33(3)].

**2. Industrial Applicability**

The subject matter of claims 1-12 is considered to be industrially applicable [PCT Article 33(4)].